

**WE CLAIM:**

1. A clamp pressure controller for controlling the clamp pressure applied to a belt of a continuously variable transmission, which transmission is in combination with a generator, the controller having a fast response mode such that in response to an input  
5 indicative of an event that may result in an increase in mechanical load transmitted through the continuously variable transmission, the controller initiates an increase in the clamp pressure in order to protect the continuously variable transmission against belt slippage.
2. A clamp pressure controller as claimed in claim 1, in which the clamp pressure controller monitors the output of the generator, or is responsive to a device monitoring the output of the generator, such that the occurrence of an increased electrical load can be detected.
3. A clamp pressure controller as claimed in claim 2, in which the output voltage of the generator is monitored and changes in the output voltage are used to infer when a change in load has occurred.
4. A clamp pressure controller as claimed in claim 1 in which the clamp pressure is increased by a predetermined amount in response to a system request.
5. A clamp pressure controller as claimed in claim 1, in which the clamp pressure is increased by a predetermined amount in response to the increased electrical load.
6. A clamp pressure controller as claimed in claim 5, in which the pressure increase is a  
20 fixed increment.

7. A clamp pressure controller as claimed in claim 5, in which the pressure increase is proportional to the current generator load or current generator clamp pressure.
8. A clamp pressure controller as claimed in claim 5, in which the pressure is increased as a function based on an expected electrical load.
- 5 9. A clamp pressure controller as claimed in claim 5, in which the pressure is increased to a predetermined clamp pressure.
10. A clamp pressure controller as claimed in claim 9, in which the predetermined pressure is the maximum clamp pressure.
11. A clamp pressure controller as claimed in claim 8, in which, where loads have a known magnitude the clamp pressure controller is arranged to receive a request to power the load from a load controller, and to set the clamp pressure to a new value based on the new power demand.
12. A clamp pressure controller as claimed in claim 11, in which the clamp pressure controller is arranged to signal that the new load can be connected.
13. A clamp pressure controller as claimed in claim 1, in which the controller operates in a further control mode wherein the controller regulates the clamp pressure to obtain a minimum clamp pressure consistent with having a safety margin against slippage.
14. A clamp pressure controller as claimed in claim 2, wherein the output of the generator is measured by measuring the voltage wave form, the current wave form and the phase

difference between the current and voltage wave forms such that the electrical load can be calculated.

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15. A clamp pressure controller as claimed in claim 1, in which once the signal to increase the clamp pressure has been removed, the clamp pressure is reduced to that which is calculated during non-transient conditions.
16. A clamp pressure controller for controlling the clamping pressure applied to a belt in a continuously variable transmission combination with a generator, the controller being arranged to calculate a desired clamp pressure as a function of generator output voltage, generator output current and phase difference between the voltage and current wave forms.
17. A clamp pressure controller as claimed in claim 16, in which the controller monitors the generator output and temporarily increases the clamp pressure in response to an event which indicates an increase in electrical load.
18. A clamp pressure controller as claimed in claim 17, in which the clamp pressure is temporarily increased to its maximum pressure.